

37895
S/079/62/032/005/008/009
D204/D307

573600
AUTHORS: Moshkina, T.M., and Pudovik, A.N.

TITLE: Synthesis of glycol diphosphates and of certain derivatives of phosphinic acids

PERIODICAL: Zhurnal obshchey khimii, v. 32, no. 5, 1962, 1671-1675

TEXT: A series of diphosphates of ethylene, diethylene and tetraethylene glycols, 1,4-butanediol, β -thiodiglycol, N-methyl diethanolamine and nitropropylene glycol was synthesized, owing to the potential application of such compounds as plasticizers. Two methods were used, giving 25 - 75 % yields: (1) Dialkyl (or diaryl) phosphoric chloroanhydrides were added dropwise to an ethereal solution of the appropriate glycol, in the presence of pyridine, at 0-5°C. The mixture was stirred for a further 1 hr. at 25 - 30°C. Pyridine hydrochloride was filtered off, the filtrate washed with water, which was then frozen out, and the ether was removed by distillation. (2) Phosphorus oxychloride was added to cooled glycols (0 - 5°C) and the mixture was stirred for 1 hr., removing the HCl formed. The resulting dichloroanhydride was added dropwise to the appropriate alcohol. Card 1/2

PUDOVIN, A.N.; ALADZHEVA, I.M.

Polyphosphites. Part 2: Reactions of dialkyl phosphorous chlorides
with aromatic dioxy compounds. Zhur.ob.khim. 32 no.6:2005-2010
Je '62. (MIRA 15:6)
(Diphosphites) (Aromatic compounds)

MUKMENEVA, N.A.; KIRPICHNIKOV, P.A.; PUDOVIK, A.N.

Polyphosphites. Part 3: Interaction of pyrocatesholphosphorous
chloroanhydride with dioxy compounds. Zhur.ob.khim. 32 no.7:2193-
2196 J1 '62. (MIRA 15:7)

1. Kazanskiy khimiko-tekhnologicheskii institut imeni S.M.Kirova.
(Phosphorous acid) (Pyrocateshol) (Diphosphites)

PUDOVIK, A.N.; KONOVALOVA, I.V.

Regrouping of methyl-di-(diethylphosphone)-carbinol. Dokl.
AN SSSR 143 no.4:875-878 Ap '62. (MIRA 15:3)

1. Kazanskiy gosudarstvennyy universitet im. V.I.Ul'yanova-
Lenina. Predstavleno akademikom B.A.Arbutovym.
(Phosphinic acid) (Phosphorus acids)

15 8110

39586
S/020/62/145/002/011/018
B106/B101

AUTHORS: Pudovik, A. N., Yevstaf'yev, G. I., and Cherkasov, R. A.

TITLE: Addition of incomplete phosphorus acid esters to unsaturated polyesters

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 145, no. 2, 1962, 344-346

TEXT: This is a continuation of previous papers on the addition of various phosphorus acid esters to unsaturated electrophilic reagents in the presence of basic catalysts. Polyesters with molecular weights between 700 and 4000 obtained by condensation of maleic anhydride with various glycols were made to react with various esters of phosphorous acid. The resulting phosphorus-containing polyesters may be of interest as plasticizers, and as a component for the production of refractory material. Excessive addition of diethyl phosphite to polyethylene glycol maleinate (molecular weight: 750) in the presence of little sodium methylate as a catalyst, is a very vigorous and exothermic reaction yielding a solid, hygroscopic resin which does not continue burning when taken out of flame. Diethyl phosphite is added to all polyester double bonds. Experiments

Card 1/3

Addition of incomplete phosphorus ...

S/020/62/145/002/011/018
B106/B101

with mixtures of diethyl phosphite and polydiethylene glycol maleinate (molecular weight: 3600) of different molar ratios showed that the diethyl phosphite is added practically quantitatively to the polyester double bonds. Adequate choice of molar ratios allows the production of polyesters containing any desired amount of phosphonic groups and double bonds. Polydiethylene glycol maleinate was also made to react with diethyl thiophosphite and two cyclic alkyl phosphites (phosphorous ester with diethylene glycol, or 1,3-butylene glycol). Phosphite was always used in excess to guarantee the addition to all polyester double bonds. Furthermore, the reaction of diethyl dithiophosphate with the condensation products of maleic anhydride and ethylene glycol, β -thiodiglycol, 1,4-butylene glycol, and diethylene glycol (molecular weights of the polyesters: 1053-3183) was studied at different molar ratios. The products of addition to all polyester double bonds were rubber-like or solid materials, e.g., of the structure $\text{HO} \left[\begin{array}{c} \text{CO-CH-CH}_2\text{-COOCH}_2\text{CH}_2\text{O-} \\ | \\ \text{S-P(OC}_2\text{H}_5)_2 \end{array} \right]_n \text{H}$. The products

of incomplete addition were viscous resins. All these polyesters are

Card 2/3

Addition of incomplete phosphorus ...

S/020/62/145/002/011/018
B106/B101

insoluble in alcohol and dioxane, some dissolve in water and yield opalescing solutions. Polyesters continue burning when taken out of flame owing to their sulfur content. Successive addition of diethyl phosphite and diethyl dithiophosphate to some unsaturated polyesters was also conducted. The ratios were chosen in such a way that the two phosphorus compounds added to 50% of the polyester double bonds. The polyesters thus obtained are viscous, water-soluble resins or solids which continue burning when taken out of flame. There are 4 tables.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina (Kazan' State University imeni V. I. Ul'yanov-Lenin)
PRESENTED: January 23, 1962, by B. A. Arbuzov, Academician
SUBMITTED: January 16, 1962

Card 3/3

PUDOVIK, A.N.; KASHEVAROVA, E.I.; KHUSAINOVA, N.G.

Phosphorus-containing amides of acrylic and methacrylic acids.
Dokl.AN SSSR 145 no.4:818-821 Ag '62. (MIRA 15:7)

1. Kazanskiy gosudarstvennyy universitet im. V.I.Ul'yanova-Lenina.
Predstavleno akademikom B.A.Arbutovym.
(Acrylamide) (Methacrylamide) (Phosphorus organic compounds)

L 12425-63 EWP(j)/EPF(c)/EWT(m)/EDS ASD Pc-4/Pr-4 RM/WW
 ACCESSION NR: AP3001162 S/0190/63/005/006/0886/0891

AUTHOR: Pudovik, A. N.; Yevstaf'yev, G. I.

TITLE: Synthesis of phosphorus-containing polyesters by the polytransesterification reaction

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 5, no. 6, 1963, 886-891

TOPIC TAGS: polyesters, transesterification, synthesis, glycols, diethyl ethylphosphinite, diethylphosphite

ABSTRACT: The objective of the present investigation was the study of polytransesterification of glycols with diethyl-ethylphosphinite and diethylphosphine. The reagents were used in equimolecular amounts, the reaction being controlled by alcohol yield, at 175, 180, 190, and 200C. It was found that the reaction rate and degree of its completion goes up with the temperature. The molecular weights of the obtained polyesters, as determined by the cryoscopic method, showed little differences. In the reaction with 1,4-butanediol the formation of tetrahydrofurane was observed along with the polyester, which suggests the cyclization of 1,4-butanediol. A 65-70% yield of cyclic acids was obtained in 30 minutes at 130C and a 100 mm pressure. Orig. art. has: 4 formulas, 5 charts, and 1 table.

Association: Kazan State University
 Card 1/2

L 14945-63

EWB(j)/EPF(c)/EWT(m)/BDS ASD Pc-4/Pr-4 RM/WW

ACCESSION NR: AP3003799

S/0190/63/005/007/1106/1110

AUTHORS: Moshkina, T. M.; Pudovik, A. N.

TITLE: Polyethyleneglycols and their derivatives

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 5, no. 7, 1963, 1106-1110

TOPIC TAGS: polyethyleneglycol, ethylene oxide polymer, ethylene glycol, mono-chloroacetate

ABSTRACT: Polymerization of ethylene oxide was conducted in flasks containing 0.08 Mol ethyleneglycol, 30 ml benzene, and 0.0008 Mol boron trifluoride etherate, through which ethylene oxide was bubbled at 40-45C for a period of 15-17 hours. The obtained polymers were waxy white compounds. These were fractionated by fractional precipitation with ethyl ether from 2% benzene solutions. The polymerization coefficients of the fractions, averaging 40-60, were determined from viscosimetric measurements in dioxane solution by Ostwald's method. The synthesis of polyethyleneglycol-mono-chloroacetates was achieved by slowly adding to polyethyleneglycol at 0C an equimolar quantity of chloroacetic acid, the resulting products representing highly viscous fluids or vaseline-like masses, soluble in ethanol, benzene, dioxane and carbon tetrachloride. When used as a catalyst in the polymerization of

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L 14945-63

ACCESSION NR: AP3003799

ethylene oxide, products with a 50-70 polymerization coefficient were obtained. A still higher polymerization coefficient of 65-85 was recorded when diethyl phosphate replaced boron trifluoride etherate in a similar setup. Orig. art. has: 2 formulas and 2 charts.

ASSOCIATION: Kazanskiy filial nauchno-issledovatel'skogo kinofoto-institut (Kazan Division of Scientific Research, Kinophoto Institute)

SUBMITTED: 17Jan62

DATE ACQ: 08Aug63

ENCL: 00

SUB CODE: CH

NO REF SOV: 004

OTHER: 007

Card 2/2

PUDOVIK, A.N.; KHUSAINOVA, N.G.; KASHEVAROVA, E.I.

Polymerization and copolymerization of phosphorus-containing esters
of methacrylic acid. *Vysokom.sped.* 5 no.9:1376-1381 S '63.

(MIRA 17:1)

1. Kazanskiy gosudarstvennyy universitet imeni V.I.Ul'yanova-Lenina.

PUDOVIK, A. N.; MOSHKINA, T. M.; KHRAMTSOVA, V. P.

Diazophosphinic and hydrazediphosphinic esters. Zhur. ob.
khim. 33 no.1:94-97 '63. (MIRA 16:1)

1. Kazanskiy filial Nauchno-issledovatel'skogo kinofotoinstituta.

(Phosphinic acid) (Diaz compounds)
(Hydrazo compounds)

PUDOVIK, A. N.; KONOVALOVA, I. V.

Interaction of ~~carboxyl~~ chloride and ~~carboxylic anhydrides~~
with sodium diethyl phosphite. Zhur. ob. khim. 33 no.1:
98-102 '63. (MIRA 16:1)

1. Kazanskiy gosudarstvennyy universitet.

(Acids, Organic) (Phosphorous acid)

PUDOVIK, A. N.; ALADZHEVA, I. M.; SOKOLOVA, I. A.; KOZLOVA, G. A.

Polyphosphites. Part 4: Reactions of dialkyl phosphoryl
chlorides with glycols. Zhur. ob. khim. 33 no.1:102-107
'63. (MIRA 16:1)

1. Kazanskiy gosudarstvennyy universitet.

(Phosphoryl chloride) (Glycols)

PUDOVIK, A.N.; KONOVALOVA, I.V.; DEDOVA, L.V.

Rearrangement of esters of hydroxymethyl (diethylphosphone)
acetic acid. Zhur.ob.khim. 32 no.2:483-486 F '63.

(MIRA 16:2)

1. Kazanskiy gosudarstvennyy universitet.
(Acetic acid) (Rearrangements (Chemistry))

PUDOVIK, A.N.; ALADZHEVA, I.M.

Acetylene-allene-acetylene rearrrangements of phosphites with a
 β , γ -acetylene bond in an ester radical. Zhur.ob.khim. 33
no.2:707-7-8 F '63. (MIRA 16:2)

1. Kazanskiy gosudarstvennyy universitet.
(Phosphorous acid) (Rearrangements (Chemistry))
(Phosphinic acid)

PUDOVIK, A.N.; ALADZHEVA, I.M.

Acetylene-allene-diene rearrangements fo diphosphites with a
β,γ - acetylene bond in a common ester radical. Zhur.ob.khim.
33 no.2:706-709 F '63. (MIRA 16:2)

1. Kazanskiy gosudarstvennyy universitet.
(Diphosphorous acid) (Rearrangements (Chemistry))
(Butadiene)

PUDOVIK, A.N.; KHUSAINOVA, N.G.; ALADZHEVA, I.M.

Reaction of nucleophilic addition to alkynyl phosphinites.
Zhur.ob.khim. 33 no.3:1045-1046 Mr '63. (MIRA 16:3)

1. Kazanskiy gosudarstvennyy universitet.
(Phosphinic acid) (Unsaturated compounds)
(Addition reactions)

PUDOVIK, A.N.; KRUPNOV, G.P.

Reactions of nucleophilic addition of phosphoric acid dialkyl
esters amides. Zhur. ob. khim. 33 no.5:1654-1658 My '63.
(MIRA 16:6)

1. Kazanskiy filial Vsesoyuznogo nauchno-issledovatel'skogo
kinofotoinstituta.

(Phosphoric acid)
(Addition reactions)

L 9907-63

EWP(j)/EPF(c)/EWP(q)/EWT(m)/

BDS-AFFTC/ASD-Pr-4/Pc-4-RM/MAY/WW/JD

ACCESSION NR: AP3002623

S/0079/63/033/006/1816/1821

AUTHOR: Pudovik, A. N.; Aladzheva, I. M.

TITLE: Polyphosphites. V. Synthesis and properties of cyclic diphosphites

SOURCE: Zhurnal obshchey khimii, v. 33, no. 6, 1963, 1816-1821

TOPIC TAGS: cyclic diphosphites, phosphorous acid, phosphorous acid esters, 1,3-ethanediol, 1,2-propanediol, 1,3-propanediol, 1,3-butanediol, bis(2-hydroxyethyl) ether, pyrocatechol, polyphosphites, polymers

ABSTRACT: The synthesis and properties of certain cyclic diphosphites having an aliphatic chain or an aromatic ring as the common radical have been studied for the first time. The diphosphites were synthesized in a 50 to 70% yield from the cyclic phosphorochloridites and various glycols or pyrocatechol, with cooling in absolute ethyl ether in the presence of triethylamine. The diphosphites are liquids readily soluble in many organic solvents, react exothermically with water,

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L 9907-63

ACCESSION NR: AP3002623

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and are stable in storage and distillation. Some of their physical constants and yields are given in table 1 of the Enclosure. The diphosphites enter all reactions characteristic of P(III)-containing compounds; triethylene diphosphite, for example, reacts with an equimolar amount of sulfur to form triethylene bistiophosphate. Reactions of the phosphites with haloalkanes are of general interest. Thus, triethylene diphosphite and bromoethane undergo an Arbuzov rearrangement at 130C to form ethylene ethylphosphonate and dibromoethane, probably by mechanism B as shown in Fig. 1 of the Enclosure. The Arbuzov rearrangement can be used to prepare polymers from the diphosphites. Heating of a diphosphite with an equimolar amount of a dihaloalkane such as dibromoethane or dibromobutane produces highly viscous, resinous P-containing polymers. Heating of a diphosphite with a catalytic quantity of iodoethane produces hard, glassy polymers which are slightly soluble in organic solvents. The preparation and properties of the polymers will be described in greater detail in a separate paper. Orig. art. has: 3 formulas and 1 table.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet (Kazan' State University)

SUBMITTED: 21May62

DATE ACQ: 20Jul63

ENCL: 02

SUB CODE: 00

NO REF SOV: 009

OTHER: 001

Card 2/42

PUDOVIK, A.N.; KONOVALOVA, I.V.; ISHMAYEVA, E.A.

Reactions of the diene synthesis and addition of butadienephosphinic
and butadienethiophosphinic esters. Zhur. ob. khim. 33 no.8:
2509-2513 Ag '63. (MIRA 16:11)

1. Kazanskiy gosudarstvennyy universitet.

PUDOVIK, A.N.; TARASOVA, R.I.; BULGAKOVA, R.A.

Reactions of sodium diethyl thiophosphite with haloallyl
compounds. Zhur. ob. khim. 33 no.8:2560-2563 Ag '63.
(MIRA 16:11)

1. Kazanskiy gosudarstvennyy universitet.

PUDOVIK, A.N.; KUZOVLEVA, R.G.

Reactions of nucleophilic reagents with vinylphosphinic and
acetoxymethylphosphinic acid esters. Zhur. ob. khim. 33
no.8:2755-2760 Ag '63. (MIRA 16:11)

1. Kazanskiy gosudarstvennyy universitet.

MUKMENEVA, N.A.; KIRPICHNIKOV, P.A.; PUDOVIK, A.N.

Polyposphites. Part 6: Interaction of diaryl phosphoryl chlorides
with dihydroxy compounds. Zhur.ob.khim. 33 no.10:3192-3196 0 '63.
(MIRA 16:11)

PUDOVIK, A.N.; GOZMAN, I.P.; NIKITINA, V.I.

Interaction of ketene with esters of α -hydroxy- and α -amino-
phosphinic acids. Zhur.ob.khim. 33 no.10:3201-3205 0 '63.
(MIRA 16:11)

PUDOVIK, A.N.; MURATOVA, A.A.; SEMKINA, E.E.

Reactions of dialkylphosphinic acid esters with trialkyl tin
halides. Zhur.ob.khim. 33 no.10:3350-3353 O '63. (MIRA 16:11)

1. Kazanskiy gosudarstvennyy universitet.

PUDOVIK, A.N.; PUDOVIK, M.A.

New method of synthesizing phosphinic ~~and~~ thiophosphinic acid esters. Part 40: Addition of acid phosphites, diphosphites, phenylphosphine to unsaturated electrophilic reagents containing one or two double bonds. Zhur.ob.khim. 33 no.10: 3353-3358 0 '63. (MIRA 16:11)

1. Kazanskiy gosudarstvennyy universitet.

PUDOVIK, A.N.; GAREYEV, R.D.

Reactions of carbethoxycarbene with unsaturated organo-
phosphorus compounds. Zhur.ob.khim. 33 no.10:3441-3442
0 '63. (MIRA 16:11)

1. Kazanskiy gosudarstvennyy universitet.

PUDOVIK, A.N.; KONOVALOVA, I.V.

Transformations of allylphosphinic esters in the presence of
sodium ethylate. Zhur.ob.khim. 33 no.10:3442-3443 0 '63.
(MIRA 16:11)

1. Kazanskiy gosudarstvennyy universitet.

PUDOVIK, A.N.; ALADZHEVA, I.M.; YAKOVENKO, L.N.

Synthesis and rearrangement of diethylpropargyl phosphite.
Zhur.ob.khim. 33 no.10:3443-3444 0. '63. (MIRA 16:11)

1. Kazanskiy gosudarstvennyy universitet.

PUDOVIK, A.N.; KONOVALOVA, I.V.

Synthesis of styrene and its homologs by pyrolysis of phosphates.
Dokl. AN SSSR 149 no.5:1091-1094 Ap '63. (MIRA 16:5)

1. Kazanskiy gosudarstvennyy universitet im. V.I.Ul'yanova-Lenina.
Predstavleno akademikom B.A.Arbutovym.
(Styrene) (Phosphates)

PUDOVIK, A.N.; ALADZHEVA, I.M.

Thermal or "pseudoclaissen rearrangements of allyl and propargyl
esters of phosphorous acid. Dokl. AN SSSR 151 no.5:1110-1113
Ag '63. (MIRA 16:9)

1. Kazanskiy gosudarstvennyy universitet im. V.I.Ul'yanova-Lenina.
Predstavleno akademikom B.A.Arbuzovym.
(Phosphorous acid) (Esters) (Rearrangements (Chemistry))

ACCESSION NR: AP4017637

S/0190/64/006/002/0253/0264

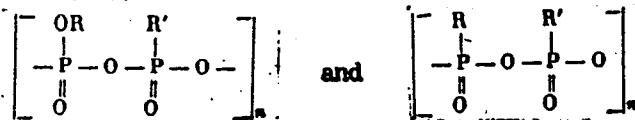
AUTHORS: Pudovik, A. N.; Muratova, A. A.; Sushentsova, F. F.; Zoreva, N. M.

TITLE: Heterochain polymers with phosphorus and oxygen atoms in the main chain. Polyphosphinophosphates and polyphosphinates

SOURCE: Vyssokomolekulyarnyye soyedineniya, v. 6, no. 2, 1964, 256-264

TOPIC TAGS: polymer, polycondensation, phosphinic acid, alkylphosphinic acid, alkylphosphinic acid ester, alkylphosphinyl dichloride, phosphoryl dichloride, ethyldichlorophosphine, polyphosphinophosphate, polyphosphinate, heterochain polymer

ABSTRACT: This investigation involved polyphosphinophosphates (PPP) and polyphosphinates (PP), the polymeric chain of which consisted of links



with radicals containing from 2 to 11 carbons. These polymers were obtained by

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ACCESSION NR: AP4017637

polycondensation of alkylphosphinic acid esters with dichlorides of alkylphosphoric-, alkylphosphinic-, and arylphosphinic acids. The polycondensation was conducted for 4-10 hours at a gradual temperature rise from 120 to 200C. The molecular weight, softening point, and solubility of the obtained polymers in water and in organic solvents were determined. It was found that the PPP compounds, which contained 4-8 carbon atoms per link, dissolved only in water and alcohols and were insoluble in organic solvents. An increase in the number of carbon atoms to 14 per link resulted in the formation of polymers soluble in organic solvents, possessing a low melting point from -30 to -50C, displaying good adhesion to glass, and having a low flammability. The replacement of an aliphatic radical by benzyl raised the melting point by about 60-80C. The PPP and PP compounds are rapidly hydrolyzed by water (even at 0C). When the molecular ratio of the issuing alkylphosphinic acid esters and of the dichlorides was 1:1, the polymerization yielded only products of low molecular weight (676-712). A 30% excess of dichloride was required to bring it up to 2600-2890. It was found that the investigated polymerization reactions were of the second order, and that the reaction rate increased with temperature, as well as in the presence of such catalysts as FeCl_3 , ZnCl_2 , and AlCl_3 . Orig. art. has: 2 charts, 4 formulas, and 3 tables.

Card 2/3

ACCESSION NR: AP4017637

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Lenina (Kazan'
State University)

SUBMITTED: 01Dec62

DATE ACQ: 23Mar64

ENCL: 00

SUB CODE: CH

NO REF SOV: 003

OTHER: 003

Card 3/3

PUDOVIK, A.N.; TARASOVA, R.I.

Reactions of di- and triarylhalomethanes with salts of phosphinic,
phosphorothioic, and phosphorodithioic acids. Zhur.ob.khim. 34 no.1:
293-298 Ja 64. (MIRA 17:3)

1. Kazanskiy gosudarstvennyy universitet.

PUDOVIK, A.N. ; FAYZULLIN, E.M.; ZHURAVLEV, G.I.

Mechanism and order of addition of phosphorus trichloride and other phosphoryl chlorides to propylene oxide. Dokl. AN SSSR 165 no.3:586-589 N '65. (MIRA 18:11)

1. Kazanskiy gosudarstvennyy universitet im. V.I. Ul'yanova-Lenina. 2. Chlen-korrespondent AN SSSR (for Pudovik).

L 11104-07 EMT(m)/EMP(j) RM
ACC NR: AP7003661

SOURCE CODE: UR/0079/66/036/008/1454/1459

AUTHOR: Radovik, A. N.; Fayzullin, E. M.; Zhuravlev, G. I.
ORG: Kazan' State University im. V. I. Ul'yanov-Lenin (Kazanskiy gosudarstvennyy universitet)

TITLE: Reactions of olefin oxides with phosphorus oxychloride and diethyl chlorophosphate

SOURCE: Zhurnal obshchey khimii v. 36, no. 8, 1966, 1454-1459

TOPIC TAGS: ethylene oxide, organic oxide, organic phosphorus compound

ABSTRACT: It was found that phosphorus oxychloride and diethyl chlorophosphate are readily added to alpha-oxides of olefins in the presence of small quantities of water or hydrochloric acid. The olefin oxides tested were ethylene oxide, propylene oxide, and glycerin epichlorohydrin. The reaction was refractory or did not proceed at all in the absence of traces of water or hydrochloric acid. A reaction scheme involving the formation of an oxonium intermediate, which is then converted to a glycol chlorohydrin, is proposed. In the reaction of phosphorus oxychloride with propylene oxide, opening of the oxide ring occurs on the side of the primary carbon atom. When the olefin oxides are treated with phosphorus oxychloride in 1:1, 2:1, and 3:1 ratios in the presence of a small amount of hydrogen chloride, monochlorides, dichlorides, and complete esters of the corresponding beta-chloroalkylphosphoric acids are obtained. A series of dialkyl-beta-chloroalkyl esters of phosphoric acid were obtained by the reactions of dichlorides of beta-chloroalkylphosphoric acids with alcohols.

Orig. art. has: 2 tables. JPRS: 38,970
SUB CODE: 07 / SUBM DATE: 03Jul65 / ORIG REF: 003

Card 1/1 jb

UDC: 547.71

0926 0284

1. 11805-01 100 (M)/257 (J) 100

ACC NR: AP7003662

SOURCE CODE: UR/0079/66/036/008/1460/1467

AUTHOR: Pudovik, A. N.; Durova, O. S.

ORG: Institute of Organic Chemistry, AN SSSR, Kazan' (Institut organicheskoy Khimii AN SSSR)

TITLE: Addition of incomplete esters of phosphorus acids to propargyl aldehyde and butynone

SOURCE: Zhurnal obshchey Khimii, v. 36, no. 8, 1966, 1460-1467

TOPIC TAGS: ester, organic phosphorus compound, mercaptan

ABSTRACT: It was found that incomplete esters of phosphorus acids: dialkylphosphorous, dialkylthiophosphorous acids and acid esters of ethylphosphinous acid are added to the simplest representatives of alpha, beta-acetylenic aldehydes and ketones -- propargyl aldehyde and butynone -- in the presence of alkali metal alcoholates at the carbonyl group, forming esters of acetylenic hydroxyphosphinic acids. This reaction was in contrast to that of ethylenic alpha, beta-unsaturated ketones. Dialkyl esters of dithiophosphoric acid react vigorously and exothermally with propargyl aldehyde at the carbon-carbon triple bond, yielding mixed esters of dithiophosphoric acid. Representatives of a new type of unsaturated organophosphorus compounds were synthesized: diphosphonallenes. 1,3-Diethyldiphosphonallene was found to react readily with ethyl mercaptan, forming an addition product. Orig. art. has: 1 figure and 1 table.

[JPRS: 38,970]

SUB CODE: 07 / SUBM DATE: 06Jul65 / ORIG REF: 003

Card 1/1 jb

UDC: 547.341

0926 0285

L 11406-67 ENT(m)/ENT(j) RM/JW
ACC NR: AP7003663

SOURCE CODE: UR/0079/66/036/008/1467/1472

AUTHOR: Pudovik, A. N.; Pudovik, M. A.

ORG: Institute of Organic Chemistry, Kazan' (Institut organicheskoy khimii)

TITLE: Atomic refraction of phosphorus in esters of alkylarylphosphinic acids, arylphosphinous acids, and reactions of addition to unsaturated compounds

SOURCE: Zhurnal obshchey khimii, v. 36, no. 8, 1966, 1467-1472

TOPIC TAGS: phosphinic acid, ester, acrylic acid, methacrylic acid

ABSTRACT: A series of eight acid esters of phenylphosphinous acid and eight acid esters of p-tolylphosphinous acid were synthesized. The atomic refraction of the pentavalent phosphorus atom in esters of phenylphosphinous acid was found to be 5.60, and in esters of p-tolylphosphinous acid 6.10. The atomic refraction of the pentavalent phosphorus atom in esters of alkylphenylphosphinic acids has a value of 5.34. Replacement of the alkoxy group by a phenyl in dialkylphosphorous and esters of alkylphosphinic acids leads to an increase in the atomic refraction of pentavalent phosphorus to 1.08. The addition of acid esters of p-tolylphosphorous acid to unsaturated electrophilic compounds: esters of acrylic and methacrylic acids, acrylonitrile, and Schiff's bases, were studied. In the presence of sodium alcoholate, the reaction proceeded exothermically, with 52-60% yields of the addition products. Monoesters of p-tolylphosphinous acid and acid phosphites were also added to unsaturated electrophilic reagents containing two double bonds: dibenzal-p-phenylenediamine and dianils produced from terephthalic aldehydes, aniline and p-chloroaniline. Orig. art. has: 5 tables. [JPRS: 38,970]

SUB CODE: 07 / SUBM DATE: 12Jul65 / ORIG REF: 004 / GTH REF: 001

Card 1/1 jb

UDC: 547.26'118

0926

0286

L 35386-66 EWT(m)/EWP(j) RM

SOURCE CODE: UR/0020/66/166/003/0615/0618

ACC NR: AP6026818

AUTHOR: Pudovik, A. N. (Corresponding member AN SSSR); Gazizov, T. Kh.; Samitov, Yu. Yu.; Zykova, T. V.

ORG: Institute of Organic Chemistry, AN SSSR, Kazan' (Institut organicheskoy khimii AN SSSR)

TITLE: Reaction of dialkyl acetyl phosphites¹ with chloral

SOURCE: AN SSSR. Doklady, v. 166, no. 3, 1966, 615-618

TOPIC TAGS: phosphorus compound, chemical composition, chemical bonding, IR spectrum

ABSTRACT: The authors studied the reaction between dialkyl acetyl phosphites and chloral. Acetyl chloride was not observed in the products of reactions of dimethyl-, diethyl- and di-n-propylacetylphosphates with chloral with a yield of 70-75%. An analysis of these products shows that they correspond to the composition $CCl_3CHO \cdot (RO)_2POCOCH_3$. There is no adsorption in the infrared spectrum in the $1680-1620\text{ cm}^{-1}$ region which is characteristic for valency vibrations of the double carbon-carbon bond. There are bands which are characteristics for the P=O bond in the 1280 cm^{-1} region and for P-O-R groups in the $1070-1020\text{ cm}^{-1}$ region. Orig. art. has: 1 figure and 2 tables.

[JPRS: 36,455]

SUB CODE: 07, 20 / SUBM DATE: 09Jul65 / ORIG REF: 008 / OTH REF: 005

UDC: 546.183.315+547.446.1

Card 1/1

L 34130-66 EWT(m)/EWP(j) RM
ACC NR: AP6025539

SOURCE CODE: UR/0079/66/036/001/0161/0162

AUTHOR: Pudovik, A. N.; Ishmayeva, E. A.; Aldunorova, R. S.; Aladzheva, I. M.

ORG: Kazan' State University im. V. I. Ul'yanov-Lenin (Kazanskiy gosudarstvennyy universitet)

TITLE: Addition of nucleophilic reagents to 2,3-di(diethylphosphone)-butadiene-1,3

SOURCE: Zhurnal obshchey khimii, v. 36, no. 1, 1966, 161-162

TOPIC TAGS: phosphorus acid, phosphorus compound, exothermic reaction, IR spectrum, potassium compound

ABSTRACT: The addition of nucleophilic reagents: dimethyl- and diethylphosphorous acids, ethyl mercaptan, and diethylamine to butadiene was found to proceed in the presence of alcoholates of the alkali metals. Addition proceeds exothermally in the 1,2-position. 1-Dimethylphosphone-2,3-di(diethylphosphone)butene-3, 1,2,3-tri(diethylphosphone)butene-3, 1-mercaptoethyl-2,3-di(diethylphosphone)butene-3, and 1-diethylamino-2,3-di(diethylphosphone)butene-3 were synthesized; their structures were established by study of their infrared spectra and oxidation with potassium permanganate.

[JPAS: 35,998]

SUB CODE: 07, 20 / SUBM DATE: 21Apr65 / ORIG REF: 001

Card 1/1

UDC: 547.26'118

ACC NR: AP7000240

SOURCE CODE: UR/0079/66/036/004/0718/0724

AUTHOR: Pudovik, A. N.; Fayzullin, E. M.; Zhuravlev, G. I.

ORG: Kazan' State University im. V. I. Ul'yanov-Lenin (Kazanskiy gosudarstvennyy universitet)

TITLE: Reactions of alpha-oxides with dialkyldithiophosphoric and dithiophosphinic acids

Moscow. Zhurnal Obshchey Khimii, Vol 36, No 4, 1966, pp 718-724

Abstract: The addition of dialkyldithiophosphoric and diphenyldithiophosphinic acids to nonsymmetrical alpha-oxides of olefins, e.g. glycerin epichlorohydrin, propylene, divinyl, styrene, and glycidol oxides, was studied. The reactions proceed readily without catalysts and are accompanied by a substantial thermal effect. Conclusions on the structure of the addition products and the order of addition of dithioacids to alpha-oxides (in accord with the Markovnikov rule) were drawn on the basis of a study of the chemical properties and infrared spectra of the products. The acid esters of dithiophosphoric and diphenyldithiophosphinic acids were found to be electrophilic in reactions with alpha-oxides, the reactions proceeding with preliminary formation of intermediate oxonium compounds. In the

reaction of ethyleneglycol chlorohydrin, 2,3-propyleneglycol chlorohydrin, and

Card 1/2

UDC: 547.26.118

0923 0778

L 04847-51

ACC NR: AP7000240

glycerin dichlorohydrin with the potassium salt of diethyldithiophosphoric acid, the corresponding ethyl esters of O,S-alkyleneglycoldithiophosphoric acid were obtained. Orig. art. has: 1 table. [JPRS: 37,177]

TOPIC TAGS: IR spectrum, organic phosphorus compound, ester

SUB CODE: 07 / SUBM DATE: 12 Apr 65 / ORIG REF: 005 / OTH REF: 002

nd
Card 2/2

L 05163-67 EWT(m)/EWP(j)/EWP(t)/ETI IJP(c) JD/RM
ACC NR: AP7000737 SOURCE CODE: UR/0062/66/000/006/1123/1124

SHAGIDULLIN, R. R., CHERNOVA, A. V., ISHMAYEVA, E. A., PUDOVIK, A. N.,
Institute of Organic and Physical Chemistry imeni A. E. Artuzov, Academy of
Sciences USSR (Instiutt organicheskoy i fizicheskoy khimii AN SSSR)

Question of Conjugation with Participation of the Phosphorus Atom

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 6, 1966,
pp 1123-1124

Abstract: The ultraviolet and infrared absorption spectra and Raman spectra of
compounds containing a diene group with substituents $-P(OR)_2=O(S)$ and $-C(OR)=O$ were

investigated in comparison with isoprene. In the case of a terminal situation
of the substituents, a bathochromic shift of the absorption maximum in the
ultraviolet spectrum and a sharp increase in the intensity of the bands in
the infrared spectrum and lines in the Raman spectrum of the valence vibra-
tions of the C=C bonds is observed. These signs of conjugation are more pro-
nounced for the carbonyl substituent. In the case of side substitution by

two $-P(OR)_2=O$ groups, the opposite picture is observed: hypsochromic shift in

Card 1/2

UDC: 541.6 + 661.718.1

L 05163-57

ACC NR: AP7000737

the ultraviolet spectrum, decrease in intensities in the infrared and Raman spectra, indicating a decrease in the conjugation between the two C=C bonds, probably due to competition by the phosphorus portions of the molecule. Preliminary results on the intensities of the bands of the P=O and P=S bonds indicate the participation of these bonds in conjugation. Orig. art. has 2 formulas. [JPRS: 37,023]

TOPIC TAGS: UV spectrum, IR spectrum, Raman spectrum, chemical bonding, chemical valence

SUB CODE: 07 / SUBM DATE: 17Mar66

Card 2/2 vmb

L 04095-67 EWP(j)/EWT(l)/EWT(m)/T IJP(c) RM

ACC NR: AR6023276

SOURCE CODE: UR/0058/66/000/003/D124/D124

AUTHOR: Pudovik, A. N.; Moshkina, T. M.; Krupnov, G. P.; Bukin, A. I.; Semenova, L. A.

TITLE: Plastification of triacetate celluloid films by mixed phosphoric-acid ethers

SOURCE: Ref zh. Fizika, Abs. 3D1028

REF SOURCE: Tr. Vses. n.-i. kinofotoin-ta, vyp. 52, 1965, 5-16

TOPIC TAGS: photographic film, plasticizer

ABSTRACT: The authors investigated the plastification of triacetate films by mixing phosphoric-acid ethers. It is shown that at least some diphosphates of diethylene glycol result in better mechanical film properties than the previously used mixture of triphenyl phosphate and dibutyl phthalate. However, in the presence in them of aliphatic radicals, their compatibility with the film deteriorates with increasing length of the radical. To improve the compatibility, one can introduce cyclic radicals, Cl atoms, and alcoyl groups into the ether groups. The most effective for the compatibility are the latter, and they also improve noticeably the physical and mechanical properties of the films. A. Karuzhanskiy. [Translation of abstract]

SUB CODE: 14

kh

Card 1/1

1 34021-66 ENF(m)/ENF(1) RM
ACC NR: AP6025532

SOURCE CODE: UR/0079/66/036/001/0039/0073

AUTHOR: Pudovik, A. N.; Khusainova, N. G.; Galeyeva, R. G.

46
B

ORG: Kazan' State University (Kazanskiy gosudarstvennyy universitet)

TITLE: Addition of compounds with a labile hydrogen atom in the methylene group to esters of propynylphosphinic acid

SOURCE: Zhurnal obshchey khimii, v. 36, no. 1, 1966, 69-73

TOPIC TAGS: hydrogen atom reaction, malonic ester, ester, chemical bonding, tautomerism

ABSTRACT: Compounds of labile hydrogen atoms in the methylene group: malonic, cyanoacetic, acetoacetic, and phosphonoacetic esters and their homologs are added in the presence of sodium alcoholate to dialkyl esters of propynylphosphinic acid to form addition products at the triple bond. There is no further addition of substances with active methylene groups at the double bonds of the addition products under the experimental conditions selected. The high observed values of the molecular refractions of the addition products and the absence of exaltation of the molecular refraction indicate the presence of keto-enol tautomerism, with predominately the enol form. The addition of selenophenol to the diethyl ester of propynylphosphinic acid gave the mono addition product 24% yield. Orig. art. has: 1 table. [JPRS: 35,998]

SUB CODE: 07 / SUBM DATE: 22Sep64 / ORIG REF: 002 / OTH REF: 003

Card 1/1 *pl*

UDC: 574.468:547.393

0916 0919

ACC NR: AP0021683

SOURCE CODE: UR/0079/66/036/003/0494/0498

AUTHOR: Khayrullin, V. K.; Pudovik, A. N.ORG: Institute of Organic Chemistry, AN SSSR, Kazan' (Institut organicheskoy khimii AN SSSR)TITLE: Reaction of ethyldichlorophosphine with crotonic acid37
B

SOURCE: Zhurnal obshchey khimii, v. 36, no. 3, 1966, 494-498

TOPIC TAGS: alkylphosphine, chlorinated organic compound, esterification, IR spectrum, chemical synthesis

ABSTRACT: The reaction of ethyldichlorophosphine with crotonic acid was found to proceed smoothly at room temperature, forming a single product, 3-methyl-4-oxo-4-chloro-4-phosphacaproyl chloride. Reaction of 3-methyl-4-oxo-4-chloro-4-phosphacaproyl chloride with alcohols yielded esters of 3-methyl-4-oxo-4-alkoxy-4-phosphacaproic acid. In these reactions, anhydrides of ethyl-beta-carbalkoxyisopropylphosphinic acid are formed at the same time. Infrared spectra are cited for the chloride and five esters. Orig. art. has: 1 figure and 2 tables. [JPRS]

SUB CODE: 07 / SUBM DATE: 05Apr65 / ORIG REF: 002

Card 1/1 15

UDC: 547.26'118

L 31799-66

EWT(m)/EWP(j)

WW/RM

ACC NR: AP6021690

SOURCE CODE: UR/0079/66/036/003/0565/0565

AUTHOR: Pudovik, A. N.; Pudovik, M. A.

61
B

ORG: Institute of Organic and Physical Chemistry, AN SSSR, Kazan' (Institut organicheskoy i fizicheskoy khimii AN SSSR)

TITLE: Addition of acid cyclic diethylene glycol diphosphite at multiple bonds

SOURCE: Zhurnal obshchey khimii, v. 36, no. 3, 1966, 565

TOPIC TAGS: reaction mechanism, chemical bonding, organic phosphorus compound, heterocyclic base compound, chemical reaction

ABSTRACT: Acid cyclic diethylene glycol diphosphite is capable of undergoing reactions of nucleophilic addition to unsaturated electrophilic compounds containing C=C, C=O, and C=N bonds. Phenyl and naphthyl isocyanates, acrylonitrile, p-dimethylaminobenzaldehyde, p-bromobenzaldehyde, and benzalaniline were used as the unsaturated compounds. The reaction was carried out at 100° with an excess of the unsaturated compound in the presence of alkali metal alcoholates. It can be carried out in the absence of a solvent or in anhydrous alcohol solution. Orig. art. has: 1 table.

[JPRS]

SUB CODE: 07 / SUBM DATE: 01oct65 / ORIG REF: 001 / OTH REF: 001

Card 1/1

UDC: 547.26.118

L 29292-66 -ENP(i)/EWT(m) RM

ACC NR: AP6019329

SOURCE CODE: UR/0079/65/035/008/1502/1503

AUTHOR: Pudovik, A. N.; Krupnov, G. P.

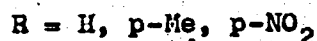
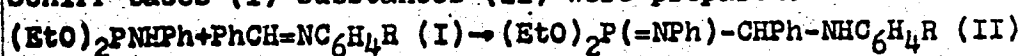
ORG: Kazan' State University (Kazanskiy gosudarstvennyy universitet)

TITLE: Addition of diethylphosphorous acid anilide to Schiff bases

SOURCE: Zhurnal obshchey khimii, v. 35, no. 8, 1965, 1502-1503

TOPIC TAGS: Schiff base, organic phosphorus compound, amide, chemical reaction

ABSTRACT: By the addition of diethylphosphorous acid anilide to Schiff bases (I) substances (II) were prepared:



The structure of (II) was confirmed by the fact that sulfur did not add to them on heating to 140° and by the formation of aniline hydrochloride from (II) (R = H) on hydrolysis in acidified water. Furthermore, trialkyl phosphites do not add to Schiff bases in a spontaneous reaction of the type by which compounds (II) formed - i.e., the amide group of diethylphosphorous acid anilide must have participated in the reaction. Compounds (II) were crystalline

Card 1/2

UDC: 547.55.3/.4+547.26'118

L 29292-66 -

ACC NR: AP6019329

solids with m. p. 172-3°, 165-6°, and 187-9° for (II) (R = H),
(II) (R = p-Me), and (II) (R = p-NO₂), resp. Orig. art. has: 3 formulas.

[JPRS]

SUB CODE: 07 / SUBM DATE: 15Mar65 - / ORIG REF: 001

Card 2/2

L 31275-66 EWT(m)/EWP(j) RM

ACC NR: AP6022799

SOURCE CODE: UR/0079/66/036/002/0296/0302

AUTHOR: Khayrullin, V. K.; Sobchuk, T. I.; Pudovik, A. N.ORG: Institute of Organic Chemistry, AN SSSR, Kazan' (Institut organicheskoy khimii AN SSSR)TITLE: Reaction of ethyldichlorophosphine with alpha,beta-unsaturated acids

SOURCE: Zhurnal obshchey khimii, v. 36, no. 2, 1966, 296-302

TOPIC TAGS: reaction mechanism, chlorinated organic compound, IR spectrum, esterification, chemical synthesis, alkylphosphine, diene synthesis

ABSTRACT: The addition of ethyldichlorophosphine to propiolic acid proceeds in the 1,4-position with the formation of 4-oxo-4-chloro-4-phospha-2-hexenoyl chloride. In the reaction of 4-oxo-4-chloro-4-phospha-2-hexenoyl chloride with alcohols and diethyl-amine, esters and the diethylamide of 4-oxo-4-alkoxy-4-phospha-2-hexenoic acid were obtained. Esters of 4-oxo-4-alkoxy-4-phospha-2-hexenoic acid, containing an electrophilic bond, readily add nucleophilic reagents and are extremely active in diene synthesis. The nucleophilic reagent is directed to the beta-carbon atom with respect to the carbomethoxy group. Infrared spectra are cited for seven reaction products. The authors thank R. R. Shagidullin for producing and interpreting the IR spectrum. Orig. art. has: 1 figure and 1 table. [JPRS]

SUB CODE: 07 / SUBM DATE: 15Mar65 / ORIG REF: 006 / OTH REF: 002

Card 1/1

UDC: 547.468.1

0915

0778

L 31270-66 EWT(m)/EWP(j) RM

ACC NR: APC022802

SOURCE CODE: UR/0079/66/036/002/0310/0314

AUTHOR: Pudovik, A. N.; Fayzullin, E. M.; Zhukov, V. P.

ORG: Kazan' State University (Kazanskiy gosudarstvennyy universitet)

TITLE: Cyclic esters of unsaturated phosphinic acids

SOURCE: Zhurnal obshchey khimii, v. 36, no. 2, 1966, 310-314

TOPIC TAGS: esterification, cyclic group, organic phosphorus compound, chlorinated organic compound, isomerization, molecular structure, chemical decomposition, phosphinic acid

ABSTRACT: A series of alkylene glycol-beta-chloroalkyl esters of phosphorus acid were prepared in high yields by the action of chlorides of alkylene glycolphosphorous acids on ethylene oxide, propylene oxide, and glycerol epichlorohydrin. The cyclic esters of phosphorous acid added sulfur when heated to 100-110°, being converted to esters of thiophosphoric acid. Thermal isomerization (180-200°) of alkylene glycol-beta-chloroalkyl esters of phosphorous acid yielded alkylene glycol esters of beta-chloroalkylphosphinic acids. An Arbuzov rearrangement also occurred upon heating of the cyclic phosphites with alkyl halides. Treatment of the alkylene glycol esters of beta-chloroalkylphosphinic acids with triethylamine in benzene solution with heating resulted in splitting off hydrogen chloride, and formation of alkylene glycol esters of vinyl- and propenylphosphinic acids. Orig. art. has: 3 tables. [JPRS]

SUB CODE: 07 / SUBM DATE: 08Mar65 / ORIG REF: 005

Card 1/1

UDC: 547.26'118

L 27714-66- EWT(m)/EWP(j) IJP(c) RM

ACC NR: AP6018514

SOURCE CODE: UR/0079/65/035/011/2080/2081

AUTHOR: Pudovik, A. N.; Ishmayeva, E. A.

ORG: none

TITLE: Addition of S-chlorodiethylthiophosphate to divinyl

SOURCE: Zhurnal obshchey khimii, v. 35, no. 11, 1965, 2080-2081

TOPIC TAGS: IR spectrum, hydrolysis, oxidation, organic phosphorus compound, organic sulfur compound, chlorinated organic compound

ABSTRACT: The reaction of S-chlorodiethylthiophosphate with the simplest representative of dienic compounds with a conjugated system of double bonds -- divinyl -- at -5° results in the production of a small amount of the diethyl ester of monothiophosphoric acid and an addition product in 60% yield. The infrared spectrum of the addition product and results of its oxidation with potassium permanganate and hydrolysis indicated that addition of S-chloroethylthiophosphate to divinyl proceeds in the 1,2-position, yielding $(EtO)_2P(=O)-S-CH_2-CHCl-CH=CH_2$. The formation of a small amount of the diethyl ester of monothiophosphoric acid is explained by partial hydrolysis of the S-chlorodiethylthiophosphate during the reaction and treatment of the reaction mixture.

Orig. art. has: 1 formula. [JPRS]

SUB CODE: 07/ SUBM DATE: 19Apr65/ ORIG REF: 002/ OTH REF: 005

Card 1/1 BLG

UDC: 547.26'118/547.368

L 26577-66 EWT(m)/EPF(n)-2/EWP(j) RM/JD

ACC NR: AP6016977

SOURCE CODE: UR/0020/65/165/003/0586/0589

AUTHOR: Pudovik, A. N. (Corresponding member AN SSSR); Fayzullin, E. M.;
Zhuravlev, G. I. 40
B

ORG: Kazan' State University im. V. I. Ul'yanov-Lenin (Kazanskiy gosudarstvennyy universitet)

TITLE: Mechanism and order of addition of phosphorus trichloride and other chlorides of phosphorus acids to propylene oxide 1

SOURCE: AN SSSR. Doklady, v. 165, no. 3, 1965, 586-589

TOPIC TAGS: phosphorus chloride, ester, tertiary amine, hydrolysis, IR spectrum, phosphorous acid, hydrogen chloride

ABSTRACT: New evidence confirming the proposed mechanism of the reactions of phosphorus trichloride and chlorides of incomplete esters of phosphorous acids with alpha-olefins (through preliminary opening of the oxide ring by hydrogen chloride) was obtained in an investigation of the reaction of propylene oxide with phosphorus trichloride and the chloride of dibutylphosphorous acid. The reactions proceeded readily when the reagents, were combined. However, when a small amount of triethylamine was added to the reaction mixtures, these reactions did not take place. If anhydrous propylene oxide was added to the dibutylphosphorous acid chloride, freshly distilled under vacuum, and protected from moisture, no reaction between them was observed. The introduction of

Card 1/2

L 26577-66

ACC NR: AP6016977

atmospheric air containing moisture into the reaction volume of the addition of one to two drops of water to the reaction mixture gave rise to a vigorous reaction. The authors conclude that the first step in the reactions considered is a partial hydrolysis of the acid chlorides and interaction of the hydrogen chloride thereby formed with the alpha-oxide. The oxonium ion formed upon addition of a proton to the oxide then either directly reacts with the chloride ion, to form propylene glycol chlorohydrin, which then reacts with the acid chloride, or perhaps simultaneously with the chloride ion, molecules of the chlorohydrin are involved in the reaction. When the chlorine atoms are replaced by alkoxyl groups, the basicity of the phosphorus atom decreases, which facilitates the reactions of the acid chloride with the oxide. A mixed ester of phosphorous acid is formed, and hydrogen chloride is regenerated. The reaction of propylene oxide with phosphorus trichloride was conducted in ether solution with cooling, at ratios of 1:1, 2:1, and 3:1; the dichloride of beta-chloroisopropylphosphorous acid, and tri-beta-chloroisopropyl phosphite were obtained in good yields. The presence of a secondary alcohol group in the investigated chlorohydrin was corroborated by the infrared spectra and chemical investigations. Orig. art. has: 1 figure and 1 table. [JPRS]

SUB CODE: 07 / SUBM DATE: 10Mar65 / ORIG REF: 004 / OTH REF: 002

Card 2/2 *10*

L 25978-66 EWT(m)/T/EWP(j)/ETC(m)=6 IJP(z) WN/RM

ACC NR: AP6015614

(A)

SOURCE CODE: UR/0020/66/168/002/0354/0356

AUTHOR: Pudovik, A. N.; Pudovik, M. A.

ORG: Institute of Organic and Physical Chemistry im. A. Ye. Arbuzov AS SSSR, Kazan
(Institut organicheskoy i fizicheskoy khimii Akademii nauk SSSR)

TITLE: Migration polymerization of acid diphosphites, diphosphinites [sic] with
p-tolylene diisocyanate and some other compounds with two double bonds

SOURCE: AN SSSR. Doklady, v. 168, no. 2, 1966, 354-356

TOPIC TAGS: phosphorus containing polymers, fire resistant material, migration poly-
merization, para tolylene diisocyanate, acid phosphite

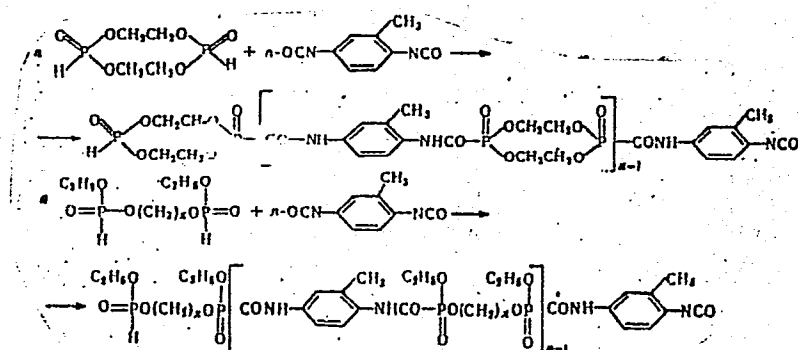
ABSTRACT: Migration polymerization of acid diphosphites with p-tolylene diisocyanate
(I) or with some other compounds was studied. Cyclo-diethylene glycol diphosphite
(II) or diethyl 1,3-propylene glycol diphosphite (III) [designated "diphosphinite"
in the original] were used as phosphorus-containing components. The effects of
temperature, polymerization time, ratio of components and the nature and amount of
solvents used in some experiments as polymerization media on the yields and properties
of the polymers obtained were studied. Most of the experiments were conducted with
components in the equimolecular ratios, in the absence of solvent and in nitrogen
atmosphere. In some cases, however, dimethylformamide, dioxane or ethyl acetate

Card 1/3

UDC: 546.183:547.315.3

L 25978-66

ACC NR: AP6015614



were used as media. In the first series of the experiments, I and II produced solid orange colored polymers. With an increase in polymerization time the yields and molecular weight of the polymers also increased until the maximum yield of 78.8% was attained. The softening temperatures also increased until they reached the 120 C range at the above-mentioned maximum yield. Maximum yields were obtained at the equimolar ratio of components. Polymerization in solvent decreased the yields and the molecular weight of the polymers. The effect is based on the solubility of polymers in the given solvent to a definite molecular weight. Polymers obtained from solvents are more uniform and less intensely colored than polymers obtained without solvent. Similar relationships were observed for the polymers obtained from I and

Card 2/3

ACC NR: L 25978-66
AP6015614

III. The polymers were yellow or orange powders, soluble only in dimethylformamide or dimethylsulfoxide. Their softening temperatures were above 100 C. Compound III was subjected to migration polymerization with some other compounds which contained two double bonds, such as ethylene glycol dimethacrylate, dibenzal acetone, some Schiff's bases or terephthalic aldehyde. The polymerization was conducted in the absence of solvent, at the equimolar ratios of the components and in the presence of sodium ethylate. Polymers were reprecipitated from dimethylformamide and dried to constant weight. They were either solid powders or viscous resins, soluble in dimethylformamide, dimethylsulfoxide or H_2SO_4 . All of them had a low combustibility, and in some cases, were almost incombustible. Orig. art. has: 1 formula, 2 tables and 2 figures..

[BN]

SUB CODE: 07, 11/ SUBM DATE: 30Sep65/ ORIG REF: 003/ OTH REF: 005/ ATD PRESS:
4250

Card 3/3 FW

I 27758-66 SWT(m)/EWP(j) RM

ACC NR: AP6018509

SOURCE CODE: UR/0079/65/035/011/2042/2046

AUTHOR: Moshkina, T. M.; Pudovik, A. N.

ORG: none

TITLE: Phosphorus-containing azo-¹and hydrazo-compounds

SOURCE: Zhurnal obshchey khimii, v. 35, no. 11, 1965, 2042-2046

TOPIC TAGS: organic azo compound, organic synthetic process, organic phosphorus compound, organic nitrile compound, hydrazine derivative, ester

ABSTRACT: The azo combination of aromatic diazo compounds with a number of organophosphorus compounds containing an activated methylene group: phosphone-acetic ester, phosphoneacetone, and phosphoneacetonitrile was carried out under mild conditions in the absence of catalysts. Some properties of the phosphorus-containing azo-compounds synthesized were studied. They decompose gradually during storage with an evolution of nitrogen; the decomposition process is substantially accelerated at increased temperature (above 50°), with an evolution of nitrogen and a further resinification of the products formed. The azo-compounds obtained are highly sensitive to the action of acids and alkalis, yielding a vigorous evolution of nitrogen, accompanied by partial decomposition and resinification of the products when treated with dilute hydrochloric

Card 1/2

UDC: 547.467/8

L 27758-66

ACC NR: AP6018509

acid or soda solution at room temperature. Direct reduction of benzeneazo-(diethylphosphonocarbethoxy)methanol in alcohol solution in the presence of Raney nickel at 50-60° yielded N-phenyl-N'-(diethylphosphonocarbethoxy)-methylhydrazine. The N=N double bond, activated by the phosphinic group, is capable of addition reactions: addition of acetoacetic, malonic, and cyanoacetic esters to esters of phenyl- and p-nitrophenylazophosphinic acids produced the corresponding hydrazophosphoric esters and in a number of cases nonphosphorus-containing products of unestablished structure. Orig. art. has:

2 tables and 3 formulas. [JPRS]

SUB CODE: 07 / SUBM DATE: 14Jul64 / ORIG REF: 004/ OTH REF: 001

Card 2/2 *Sp*

L 21860-66 EWT(m)/EWP(j) RM

ACC NR: AP6012651

SOURCE CODE: UR/0079/65/035/002/0358/0363

AUTHOR: Pudovik, A. N.; Ishmayeva, E. A.

ORG: Kazan' State University (Kazanskiy gosudarstvennyy universitet)

TITLE: Butadienethio- and selenophosphinic esters

SOURCE: Zhurnal obshchey khimii, v. 35, no. 2, 1965, 358-363

TOPIC TAGS: ester, phosphoric acid, mercaptan, butadiene

ABSTRACT: Methyl, n-propyl, and n-butyl esters of 1, 3-butadienethio-phosphinic acid were obtained and a study made of the addition of unsaturated esters of phosphoric acids and ethylmercaptan to these esters. The addition of nucleophilic reagents to butadiene thiophosphinic esters occurs in the 1, 4 position. The acid dichloride of 4-chlorobutene-2-selenophosphonic acid and the dimethyl ester of 1, 3-butadiene selenophosphonic acid were obtained and characterized. Orig. art. has: 1 table. [JPRS]

SUB CODE: 07 / SUBM DATE: 16Dec63 / ORIG REF: 003 / OTH REF: 001

Card 1/1

UDC: 547.315.2:546.183

PUDOVIK, A.N.; GAZIEV, T.Kh.; SAMITOV, Yu.Yu.; LYKOVA, T.V.

Reaction of dialkylacetyl phosphites with chloral. Dokl. AN SSSR
166 no.3:615-618 Ja '66. (MIRA 19:1)

1. Institut organicheskoy khimii AN SSSR, Kazan'. 2. Chlen-
korrespondent AN SSSR (for Pudovik). Submitted July 9, 1965.

PUDOVIK, A.N.; KUZOVLEVA, R.G.

Polymerization and copolymerization of α - and β -carboxy-
vinyl phosphinates. Vysokom. soed. 7 no.9:1539-1542 S '65.

(MIRA 18:10)

1. Kazanskiy gosudarstvennyy universitet im. V.I. Ul'yanova-Lenina.

L 10185-66 EWT(m)/EWP(j) RM

ACC NR: AP5028480

SOURCE CODE: UR/0286/65/000/020/0064/0064

AUTHORS: Moshkina, T. M.; Pudovik, A. N.; Krupnov, G. P.; Bukin, A. I.; Semenova, L. A.

ORG: none

TITLE: Method for obtaining plasticized ester-cellulose films, for instance, triacetate cellulose films. Class 39, No. 175646¹⁵ [announced by All-Union Scientific Research Motion Picture Institute (Vsesoyuznyy nauchno-issledovatel'skiy kinofotoinstitut)]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 20, 1965, 64

TOPIC TAGS: polymer, plasticizer, plastic compound, plastic material, plastic, film

ABSTRACT: This Author Certificate presents a method for obtaining ester-cellulose films, for instance, triacetate cellulose films, by introducing esters of polybasic acids into a solution of cellulose triacetate. To increase the variety of plasticizers, esters of phosphonoacetic acid are used as the plasticizing agent.

SUB CODE: 11/ SUBM DATE: 13Jun64

Card 1/1

UDC: 678.544.43 678.049.13.002.2

KIRPICHNIKOV, F.A.; MUKMENEVA, N.A.; PUDOVIK, A.N.; KOLYUBAKINA, N.S.

Reaction of phosphorous acid esters with 1,1-diphenylethane
hydroperoxide. Dokl. AN SSSR 164 no.5:1050-1053 O '65.

(MIRA 18:10)

1. Kazanskiy khimiko-tekhnologicheskii institut im. S.M.Kirova.
2. Chlen-korrespondent AN SSSR (for Pudovik).

PUDOVIK, A.N.; MOSHKINA, T.M.; KRUPNOV, G.P.; BUKIN, A.I.; SEMENOVA, L.A.;
Prinimali uchastiye: KOSTYUKOVA, L.A., laborant; PETROVA, M.G.,
laborant; TEMIRBAYEV, A.M., inzh.; FAIZULLIN, A.Yu., inzh.; POLOZOVA,
L.P., laborant; NAZAROVSKAYA, G.V., laborant

Synthesis and study of organophosphorus plasticizers for the tri-
acetate film bases. Trudy NIKFI no.46:17-25 '62.

(MIRA 18:8)

PUDOVIK, A.D.; YEVSTAF'YEV, G.I.

Synthesis of phosphorus-containing polyesters by means of
homopolyesterification reaction. Dokl. AN SSSR 164
no.6:1331-1334 O '65.

(MIRA 18:10)

1. Kazanskiy gosudarstvennyy universitet im. V.I.Ul'yanova-Lenina.
2. Chlen-korrespondent AN SSSR (for Pudovik).

L 63035-65 EWP(j)/EWT(m) Pc-l JAJ/PM

ACCESSION NR: AP5013053

UR/0190/65/007/005/0808/0812
541.64+678.675

30

28

2

AUTHORS: Pudovik, A. N.; Ishmayeva, E. A.

TITLE: Polycondensation of 4-chlorobut-2-enephosphinyl chloride with dihydroxy compounds

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 5, 1965, 808-812

TOPIC TAGS: polycondensation, polymer, resin, reaction kinetics, activation energy

ABSTRACT: The investigation is an extension of the work of V. V. Korshak, I. A. Gribova, and M. A. Andreyeva (Izv. AN SSSR. Otd. khim. n., 1957, 631). Polycondensation of 4-chlorobut-2-enephosphinyl chloride (A) with aliphatic and aromatic dihydroxy compounds was investigated. The condensation was carried out at 60C. The velocity and extent of reaction were determined by the quantity of HCl evolved. The activity of aliphatic glycols in decreasing order of activity was: 2 propylene-1,2-glycol, ethylene glycol, diethylene glycol, butylene-1,4-glycol, dipropylene glycol, and hexaethylene glycol. The activity of aromatic glycols diminished in the order: pyrocatechin, diphenylolpropane, hydroquinone.

Card 1/2

L 63035-65

ACCESSION NR: AP5013053

The reaction between A and diethylene glycol was found to be second order with an energy of activation of 17.9 ± 2.3 Kcal/mole. Dehydrochlorination of polyesters of A and diethylene glycol and of A and butyleneglycol-1,4 yielded polyesters with a butadiene radical at the phosphorus atom. Orig. art. has: 1 table and 3 graphs.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina
(Kazan State University)

SUBMITTED: 04Jul64

ENCL: 00

SUB CODE: MT,60

NO REF SOV: 005

OTHER: 001

FC
Card 2/2

PUDOVIK, A.N.; ALADZHEVA, I.M.; YAKOVENKO, L.N.

Synthesis and rearrangements of propargyl phosphites and allenyl
phosphonates. Zhur. ob. khim. 35 no.7:1210-1217 J1 '65.
(MIRA 18:8)

1. Kazanskiy gosudarstvennyy universitet.

L 62796-65 EWT(m)/EPT(c)/EWP(j)/T Pc-l/Pr-l RM

ACCESSION NR: AP5018432

UR/0190/65/007/007/1248/1253
66.095.26+678.744

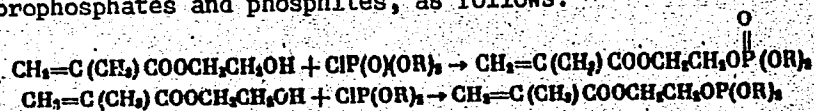
AUTHOR: Pudovik, A. N.; Kashevarova, E. I.; Goloven'kina, L. I.

TITLE: Polymerization and copolymerization of beta-methacryloxyethyl dialkyl phosphates, beta-methacryloxyethyl dialkyl phosphites and mixed anhydrides of methacrylic acid and dialkylphosphorous acids

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 7, 1965, 1248-1253

TOPIC TAGS: methacrylic acid, organophosphorus compound, phosphate, phosphite

ABSTRACT: The synthesis of a series of new esters of methacrylic acid containing phosphorus in the ester radical was carried out. The β -methacryloxyethyl alkyl phosphates and phosphites studied were obtained by reacting ethylene glycol with dialkyl chlorophosphates and phosphites, as follows:



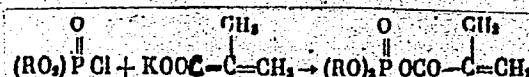
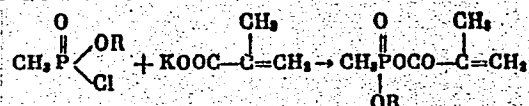
The effect of temperature and nature of the initiator (0.2 mole % benzoyl peroxide

Card 1/3

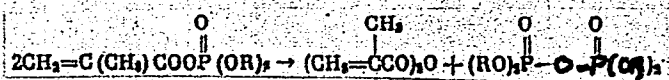
L 62796-65

ACCESSION NR: AP5018432

or 0.2 mole % azoisobutyrodinitrile) on the polymerization rate of β -methacryloxy-ethyl-diethyl phosphate was investigated; the relationships observed also apply to β -methacryloxyethyl-diethyl phosphite. The copolymerization of the latter with methyl methacrylate was studied at 70° C in the presence of 0.5 mole % benzoyl peroxide. To prepare mixed anhydrides of methacrylic acid and acid esters of phosphorous acids, the reaction of phosphorous acid anhydrides with potassium methacrylate was employed, as follows:



The anhydrides were thermally unstable and disproportionate during vacuum distillation:

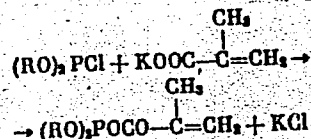


Card 2/3

L 62796-65

ACCESSION NR: / AP5018432

Dialkylmethacryl phosphites, which were thermally stable, were obtained by the reaction



Mixed anhydrides of methacrylic and dialkylphosphorous acids polymerize readily in the presence of benzoyl peroxide and even more readily in the presence of azoisobutyronitrile. Mixed anhydrides of diethylphosphorous and methacrylic acid form solid polymers insoluble in organic solvents. Orig. art. has: 3 figures and 4 tables.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina
(Kazan State University)

SUBMITTED: 13Aug64

ENCL: 00

SUB CODE: MT, GC

NO REF SOV: 004

OTHER: 000

Card 3/3

L 4577-66 EWT(m)/EPF(c)/EWP(j)/T RM

ACC NR: AP5027231

SOURCE CODE: UR/0020/65/164/006/1331/1334

AUTHOR: Pudovik, A. N. (Corresponding member AN SSSR); Yevstaf'yev, G. I.

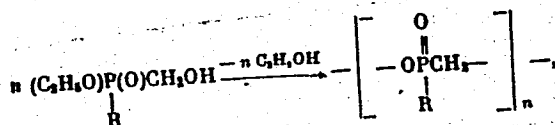
ORG: Kazan State University im. V. I. Ul'yanov-Lenin (Kazanskiy gosudarstvennyy universitet)

TITLE: Synthesis of phosphorus-containing polyesters by homopolytransesterification

SOURCE: AN SSSR. Doklady, v. 164, no. 6, 1965, 1331-1334

TOPIC TAGS: polymer, phosphorus containing polymer, polyester, transesterification

ABSTRACT: This work deals with the homopolytransesterification of methylolphosphinic esters:



The reaction mixture was heated in the absence of any catalyst. Product yields were 50-60%. Rate studies show that the reaction follows second-order kinetics. Reaction rate constants were calculated; the energy of activation was found to be $E = 23,400 \pm 1000$ kal/mole. The polymers obtained in the above reaction are initially viscous liquids with mol. wt = 700-800. On further heating they change to almost solid polyesters with mol. wt = 2000. Orig. art. has: 3 figures. [VS]

UDC: 678.649.12678.85

Card 1/1

L 4577-66

ACC NR: AP5027231

SUB CODE: OC, GC/ SUBM DATE: 10Apr65/ ORIG REF: 005/ ATD PRESS: 4136 0

Card 2/2

DP

MOSHKINA, T.M.; PUDOVIK, A.N.; ZIL'BERMAN, L.V.

Phosphorus-containing hydrazo and azo compounds. Dokl. AN SSSR 163
no.6:1401-1403 Ag '65. (MIRA 18:8)

1. Kazanskiy gosudarstvennyy universitet im. V.I.Ul'yanova-Lenina.
2. Chlen-korrespondent AN SSSR (for Pudovik).

POPOV, A.D.; KONONOV, I.V.

Reactions of esters of trivalent phosphorus acids with esters
of pyruvic acid. Zhur. ob. khim. 35 no.9:1501-1505 1965.
(MIRA 18:10)

1. Kazanskiy gosudarstvennyy universitet.

L 1580-66 EWT(m)/EPF(e)/EWP(j)/T RPL WJ/RM

ACCESSION NR: AP5022598

UR/0190/65/007/009/1539/1542
66.095.26+678.86

AUTHORS: ⁴⁴⁵⁵ Pudovik, A. N.; ⁴⁴⁵⁵ Kuzovleva, R. G. ⁴⁴⁵⁵

TITLE: Polymerization and copolymerization of α - and β -carbalkoxyvinyl phosphinates

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 9, 1965, 1539-1542

TOPIC TAGS: polymerization, copolymer, phosphinate, vinylphosphinate

ABSTRACT: Synthesis and polymerization of diethyl α - and β -carbalkoxyvinyl phosphinate (I and II, respectively) have been investigated as a continuation of the study of polymerization and copolymerization of various derivatives of vinylphosphinates reported earlier by the authors (Vysokomolek. soyed., 6, 737, 1964). The two methods for the preparation of I, reported in the literature by J. B. Dickey and H. W. Coover (U. S. Pat. 2559854, Chem. Abstr. 45, 8810, 1951) and A. Ya. Yakubovich, L. Z. Soborovskiy, L. I. Muler, and V. S. Fayermark (Zh. obshch. khimii, 28, 317, 1958) had to be disregarded, as the first one resulted in the wrong product, while the second gave an impure one. Treatment of the diethyl α -chloro- β -carbomethoxyethyl phosphinate (from the oxidative phosphorylation

Card 1/2

L 1580-66

ACCESSION NR: AP5022598

of methylacrylate) with twice the theoretical amount of triethylamine gave pure I, b.p. 110-112C/2 mm, d_4^{20} 1.1687, n_D^{20} 1.4389. II, b.p. 131-133C/4 mm, d_4^{20} 1.1412, n_D^{20} 1.4490 was obtained by using the method of K. M. Kirillova, V. A. Kukhtin, and T. M. Sudakova (Dokl. AN SSSR, 149, 316, 1963). Effects of the temperature, the nature, and the concentration of the initiator on the block polymerization of I and II were studied. It was found that I polymerized to the extent of 80% at 70C after 10 hours in the presence of 1 mole% of benzoyl peroxide. II gave a yield of only 15%. Increase of the temperature to 90C as well as the increase of the concentration of the initiator (azo-bis-isobutyronitrile) resulted in increased yield and polymerization rate. Copolymerization of I with methylmethacrylate, methylacrylate, and acrylonitrile gave solid polymers. II with methylmethacrylate gave a resinous, soft polymer. Orig. art. has: 1 figure and 1 table.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina
(Kazan State University)

SUBMITTED: 120ct64

H4155

ENCL: 00

SUB CODE: 00

NO REF SOV: 004

OTHER: 001

Card 2/2

KIRPICHNIKOV, P.A.; MUKMENEVA, N.A.; PUDOVIK, A.N.; YARTSEVA, L.M.

Interaction of α,α -diphenylpicrylhydrazyl with phosphorous
acid esters. Zhur. ob.khim. 34 no. 5:1683-1684 My '64.
(MIRA 17:7)

PUDOVIK, A.N.; CHIRKASOV, R.A.

Synthesis of polyalkylene glycol dithiophosphates and some
of their addition reactions. Vysokom. soed. 6 no.4:741-
744 Ap '64. (MIRA 17:6)

1. Kazanskiy gosudarstvennyy universitet imeni V.I. Ul'yanova-
Lenina.

ACCESSION NR: AT4033992

S/0000/63/000/000/0091/0095

AUTHOR: Pudovik, A. N.; Cherkasov, R. A.; Pudovik, M. A.

TITLE: Polyalkyleneglycol dithiophosphates and the reactions of their addition to unsaturated compounds

SOURCE: Geterotsepnyye vy*sokomolekulyarnyye soyedineniya (Heterochain macromolecular compounds); sbornik statey. Moscow, Izd-vo "Nauka," 1963, 91-95

TOPIC TAGS: dithiophosphate, polyalkyleneglycol dithiophosphate, polyester, phosphorus containing polyester, polyester synthesis, unsaturated compound, electrophilic unsaturated compound, nucleophilic unsaturated compound, polyester addition reaction

ABSTRACT: Several polyalkyleneglycol dithiophosphates were synthesized by re-esterification of dithiophosphoric acid ethers with glycols (ethylene glycol, 1,2-propylene glycol, 1,4-butylene glycol, diethylene glycol, pyrocatechol and hydroquinone). Reactions lasted 1 to 6 hours at 50-130 mm pressure and 80-170C. The resultant polyesters (viscous or nearly solid transparent resins with 15.08 to 20.36% P) were used in additional reactions (30-60 min., 70-80C, 30% excess of the saturated compound, without a catalyst or with sodium ethylate, in dioxane solution for solid or highly viscous polyesters) to acrylonitrile, methacrylate, diethyl-

Card 1/2

ACCESSION NR: AT4033992

maleate, styrene, benzylaniline and p-nitrobenzylaniline. Orig. art.has: 3
tables and 4 chemical equations.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina
(Kazan State University)

SUBMITTED: 09Jul62

DATE ACQ: 30Apr64

ENCL: 00

SUB CODE: 0C

NO REF SOV: 004

OTHER: 002

Card 2/2

PUDOVIK, A.N.; SITDYKOVA, F.N.

Addition of organophosphorus compounds with a mobile hydrogen
to divinyl sulfone and p-di(β -nitrovinyl)benzene. Zhur. ob.
khim. 34 no. 5:1682-1683 My '64. (MIRA 17:7)

1. Kazanskiy gosudarstvennyy universitet.

ACCESSION NR: AP4032576

S/0190/64/006/004/0737/0740

AUTHORS: Pudovik, A. N.; Kuzovleva, R. G.

TITLE: Polymerization and copolymerization of α -acetoxyvinylphosphinic acid esters

SOURCE: Vyssokomolek. soedin., v. 6, no. 4, 1964, 737-740

TOPIC TAGS: alkyl vinylphosphinate, methyl vinylphosphinate, ethyl vinylphosphinate, propyl vinylphosphinate, alpha acetoxyvinylphosphinic acid ester, alkyl vinylphosphinate polymerization, alkyl vinylphosphinate copolymerization, methyl methacrylate, methyl acrylate, styrene

ABSTRACT: The polymerization of methyl, ethyl, and n-propyl esters of α -acetoxyvinylphosphinic acid (AOVPA), and also the copolymerization of these esters with methyl methacrylate, methyl acrylate, and styrene were investigated. The rate of block polymerization was determined by the dilatometric technique, and the yield was estimated by removing the monomer by steam distillation. It was found that in the presence of 2 mole/% benzoyl peroxide the polymerization rate of AOVPA markedly increased with temperature. At 90C it reached 60% in 10 hours

Card 1/2

ACCESSION NR: AP4032576

(at 50C it took 40 hours to produce 50%). Experiments with various concentrations of benzoyl peroxide at 70C showed an enhancing effect of higher concentrations on the polymerization rate of AOVPA. A comparison of the polymerization rates of methyl, ethyl, and propyl esters of AOVPA revealed that the methyl ester had the lowest polymerization rate, and the propyl ester the highest. [Abstracter's note: the authors erred in claiming in the text and conclusions the reverse effect, as evidenced by Chart 27. The copolymerization of AOVPA with methyl methacrylate, methyl acrylate, and styrene was conducted in block, at 70C for a duration of 15 hours, in the presence of 1 mole/% benzoyl peroxide. The copolymers with a small content of AOVPA were hard, transparent products, while the ones containing a larger percentage of AOVPA represented viscous resins. The molecular weights of the copolymers were within the 4580-6616 range, and their vitrification temperature varied from 48C to 87.5C. Orig. art. has: 2 charts and 1 table.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina
(Kazan' State University)

SUBMITTED: 01Jun63

DATE ACQ: 11May64

ENCL: 00

SUB CODE: CH

NO REF SOV: 005

OTHER: 004

Card 2/2

L 53586-65 EWT(m)/EWP(j) Pc-4 RM

ACCESSION NR: AP5016305

UR/0190/64/006/012/2145/2148

AUTHOR: Nikitina, V. I.; Izmaylova, M. I.; Kurguzova, A. M.; Pudovik, A. N.

TITLE: Reactions of nucleophilic addition to unsaturated polyesters

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 6, no. 12, 1964, 2145-2148

TOPIC TAGS: polyester plastic, macromolecular chemistry

Abstract: Polyesters produced on the basis of maleic anhydride and diethylene glycol, with molecular weights from 800 to 3,000, were investigated in nucleophilic addition reactions. Dialkylphosphorous acids, containing from two to seven carbon atoms in the ester radicals, diethylphosphoneacetic ester, and diethylphosphoneacetone, as well as ammonia and amines (diethylamine and aniline) and malonic, acetoacetic, and cyanoacetic esters were added to the unsaturated polyesters. It was found that these reagents can add to polydiethylene glycol fumarate in the presence of alkali metal alcoholates, and in certain cases (amines) in the absence of catalysts as well. The properties of the resultant products were investigated. It was also shown that electrophilic reagents, in particular,

Card 1/2

L 53586-65

ACCESSION NR: AP5016305

chloride, can be added to unsaturated polyesters; and addition product corresponding to polydiethylene glycol dichlorosuccinate was obtained when fluorine was passed through a cooled chloroform solution of polydiethylene glycol fumarate with molecular weight 894. Orig. art. has 2 formulas and 3 tables.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Uliyanova-Lenina
(Kazan State University)

SUBMITTED: 29 Jan 64

ENCL: 00

SUB CODE: MT, GC

NO REF SOV: 001

OTHER: 001

JPRS

Card

BAB
2/2

PUDOVIK, A.N.; RAKOV, A.P.

Thermal rearrangement of complete phosphorous acid esters with
saturated radicals. Dokl. AN SSSR 161 no.6:1352-1355 Ap '65.
(MIRA 18:5)

1. Kazanskiy gosudarstvennyy universitet im. V.I.Ul'yanova-Lenina.
2. Chlen-korrespondent AN SSSR (for Pudovik).

ACCESSION NR. AT4033991

S/0000/63/000/000/0087/0090

AUTHOR: Nikitina, V. I.; Maklakov, A. I.; Balakireva, R. S.;
Pudovik, A. N.

TITLE: Polymers consisting of aromatic rings conjugated with hetero
atoms. I. Polyphenylene- and polydiphenyleneimines.

SOURCE: Geterotsepnny*ye vy*sokomolekulyarny*ye soyedineniya
(Heterochain macromolecular compounds); sbornik statey. Moscow,
Izd-vo "Nauka," 1963, 87-90

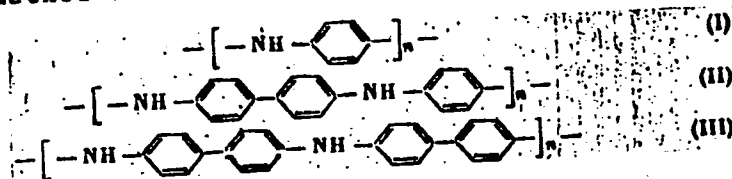
TOPIC TAGS: organic semiconductor, semiconducting polymer, poly-
phenyleneimine, polydiphenyleneimine, polymer electrical property

ABSTRACT: Polyphenyleneimines, semiconducting polymers containing
NH groups between aromatic rings in the backbone, have been prepared,
and their electrical and magnetic properties have been studied at the
Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanov-Lenina
(Kazan' State University). Polycondensation of aromatic diamines with
dihydric phenols was used. Polymer I was obtained from p-phenylene-
diamine and hydroquinone; II, from benzidine and hydroquinone;

Card 1/4

ACCESSION NR. AT4033991

and III, from benzidine and 4,4'-dihydroxybiphenyl. The polycondensation was carried out in the melt at 260—280C for 6 hr, and then at the same temperature and 1—2 mm Hg for 2 hr. All the polymers are black powders insoluble in the common organic solvents except dimethylformamide. Three types of polymers were prepared: reprecipitated (a), nonreprecipitated (b), and reprecipitated and heat-treated in air at 320C for 1 hr (c). On the basis of the synthesis method and IR spectroscopy, the following structures were



assumed. D-c electrical conductivity was determined for pellet samples at 20—100C. The temperature dependence of conductivity obeyed an exponential law fairly well. Numerical data are given in Table 1 of the Enclosure. All the samples exhibited high conductivity, positive magnetic susceptibility, and an EPR signal. The unpaired

Card 2/4

ACCESSION NR. AT4033991

electron concentration in Ia was calculated to be about 10^{19} — 10^{20}
per gram. Orig. art. has: 2 tables, 1 figure, and 1 formula. .

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I.
Ul'yanova-Lenina (Kazan' State University)

SUBMITTED: 09Jul62 DATE ACQ: 30Apr64 ENCL: 01

SUB CODE: CH,PH NO REF SOV: 010 OTHER: 000

Card 3/4

ACCESSION NR: AT4033991

ENCLOSURE: 01

Table 1. Electrical and magnetic properties of polyphenyleneimines

Polymer	Sample	$\sigma_{20}^{\circ}, \text{ohm}^{-1} \text{cm}^{-1}$	$\rho_{20}^{\circ}, \text{ohm}^{-1} \text{cm}^{-1}$	E, ev	EPR line half width, gauss	Polymer	Sample	$\sigma_{20}^{\circ}, \text{ohm}^{-1} \text{cm}^{-1}$	$\rho_{20}^{\circ}, \text{ohm}^{-1} \text{cm}^{-1}$	E, ev	EPR line half width, gauss
I	a	10^{-9}	10^{-14}	0.48	27	II	a	10^{-9}	10^{-13}	0.68	29
	b	10^{-10}	10^{-14}	0.60			b	10^{-12}	10^{-15}	0.86	
	c	10^{-11}	10^{-16}	0.68		III	a	10^{-10}	10^{-16}	0.50	29

Card 4/4

PUDOVIK, A.N.; KUZOVLEVA, R.G.

Polymerization and copolymerization of α -acetoxystyrylphosphinic acid esters. Vysokom. soed. 6 no.4:737-740 Ap '64.

(MIRA 17:6)

1. Kazanskiy gosudarstvennyy universitet imeni V.I. Ul'yanova-Lenina.

L 21810-65 EPA(B)-2/EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4/Pt-10
WW/RM

ACCESSION NR: AP5001478

S/0190/64/006/010/2139/2144

AUTHOR: Pudovik, A. N.; Yevstaf'yev, G. I.

TITLE: Synthesis of polyphosphinites by transesterification

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 6, no. 12, 1964,
2139-2144

TOPIC TAGS: phosphorus containing polymer, polyphosphinite, polyglycol-
phosphinite, glycol, polyethylene glycol, self extinguishing polymer,
transesterification

ABSTRACT: As a part of their study of the formation of phosphorus(III)-
containing polyesters, the authors obtained poly(alkylene glycol
phenylphosphinites) and poly(alkylene glycol ethylphosphinites) by the
transesterification of dialkyl phenyl- or dialkyl ethyl-phosphinite.
It was demonstrated that the polycondensation of these esters with
aliphatic glycols, such as ethylene, diethylene, or tetraethylene
glycol, essentially takes place via cyclic phosphinites. These cyclic
esters seem to be quite stable, even when the number of atoms in the

Card 1/2

L 21810-65

ACCESSION NR: AP5001478

2

ring exceeds six. Pure cyclic esters, isolated in the study, are liquids with a phosphorus content close to the theoretical. On standing, they polymerize to oligomers; on heating over 140C, high-molecular-weight products insoluble or slightly soluble in benzene or dioxane are formed. The polyesters obtained are viscous liquids; when burned, some of them are self-extinguishing after being taken out of the flame. Cyclic glycol phosphinites and their polymers contain trivalent phosphorus; this is indicated by addition reactions, e. g. with sulfur, in which phosphonothioate derivatives are formed. Orig. art. has: 1 formula, 4 figures, and 2 tables.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina (Kazan State University)

SUBMITTED: 29 Jan 64

ENCL: 00

SUB CODE: OC, MT

NO REF SOV: 008

OTHER: 002

ATD PRESS: 3164

Card 2/2